Total No. of Questions : 12]

SEAT No. :

P4629

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[4759] - 127
B.E. (Electronics)
ADVANCED COMMUNICATION SYSTEM
(2008 Course) (404210) (Elective - IV) (Semester - II)

Time : 3Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answer any Three questions from Section I and Three questions from Section II.***
2) ***Answers to the two Sections should be written in seperate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Derive the formula for mobile radio propagation over water. **[6]**

b) Discuss the different propagation paths in Mobile transmission. **[6]**

c) With the help of suitable diagram explain: **[6]**

i) Delay Spread

ii) Coherence Bandwidth

OR

Q2) a) Describe Various mechanisms available to enhance the spectral capacity in mobile system. **[6]**

b) Explain Mobile point to point Lee model. **[6]**

c) Explain Ground incident angle, elevation angle and reflection angle. **[6]**

Q3) a) Derive free space path loss formula for wireless communication. **[8]**

b) With the help of suitable example describe various interferences occurred in reception of signal. **[8]**

OR

P.T.O.

Q4) a) Describe Interference reducing directional antennas and Space diversity antenna. **[8]**

b) Describe the following w.r.t. mobile communication. **[8]**

i) Underlay - overlay

ii) Handoffs & dropped calls

Q5) a) How security is achieved in Mobile network? Explain algorithms related to Security. **[8]**

b) With neat block diagram, describe GSM architecture in detail. **[8]**

OR

Q6) a) With the help of suitable diagram, explain macro cells & microcell to enhance the capacity. **[8]**

b) Describe the architecture of GPRS. **[8]**

SECTION - II

Q7) a) Compare LEO, MEO and GEO Satellites. **[4]**

b) State and explain Kepler's three laws of planetary motion. **[6]**

c) Draw the block diagram and explain Attitude and Orbit Control subsystem of a satellite. **[6]**

OR

Q8) a) Draw and explain major subsystems on a satellite. **[8]**

b) Define and explain the following terms with respect to the satellite communication. **[8]**

i) Poles

ii) Latitude

iii) Hemispheres

iv) Greenwich Meridian

Q9) a) A SCPC-FM satellite link has an RF channel bandwidth of 45 kHz and a base band maximum frequency of 3.4 kHz. De-emphasis provides a subjective improvement in base band S/N ratio of 7dB. Calculate the base band S/N ratio for the voice channel for a receiver C/N ratio of 13 dB. If the FM demodulator has an FM threshold at 6dB, what is the link margin for this system? **[8]**

b) Define and explain the following terms with reference to the FM techniques. **[8]**

i) Signal to Noise Ratio

ii) Pre-emphasis & De-emphasis

OR

Q10)a) A satellite transponder has a bandwidth of 358.4 MHz. Earth stations use RRC filters with $\alpha = 0.4$. What is the maximum bit rate that can be sent through this transponder with BPSK and QPSK? **[8]**

b) Define & explain the following terms with reference to the digital modulation techniques used on satellite links. **[8]**

i) Non-uniform Quantization

ii) Symbol Error Rate

Q11)a) What are the various 'Multiple Access Techniques' used in modern satellite communications? Compare them. **[9]**

b) Define and explain the meaning of VSAT? Explain various VSAT network configurations with the help of a hub. List the applications of VSAT.**[9]**

OR

Q12)a) Explain with a neat diagram the FDMA frame structure. **[9]**

b) Explain the terms with respect to VSAT. **[9]**

i) Link budget

ii) Free space path loss

iii) Edge of coverage loss